

Show Transcript
Deconstructing Dinner
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“Sterile Seeds”

Producer/Host - Jon Steinman
Transcribed by Kim Place-Gateau

Jon Steinman: And welcome to Deconstructing Dinner – produced in the studios of Kootenay Co-op Radio in Nelson, British Columbia. My name’s Jon Steinman.

Here on Deconstructing Dinner, we dissect our daily food choices and discuss the impacts that these choices have on ourselves, our communities, and the planet.

To find out more info on previous broadcasts or to comment on the content of this program, you can visit the program’s web site at www.cjly.net/deconstructingdinner.

On today’s program we explore what has recently been a very controversial issue – an issue that has once again risen to the surface since recent UN meetings in Spain, and that is the issue of what is known as Terminator Technology. The unofficial name of Terminator certainly does not sound very appetizing, but given this technology represents the possible future of the global supply of food, this is very much a topic worth digesting. After all, Terminator Technology or otherwise known as Technology Protection System or TPS, is one that has been developed for seeds – seeds being the very foundation of the planet’s food.

On today’s program we will be hearing from Devlin Kuyek – a Montreal-based researcher who is on the staff of GRAIN - an international non-governmental organization. We will be hearing from Terry Boehm – Vice-President of the National Farmers Union based in Saskatchewan. Lucy Sharratt of the Ottawa-based Ban Terminator campaign, and Harry Collins – Vice-President of Technology Transfer for Delta & Pine Land Company – the Mississippi-based company who along with the United States Department of Agriculture is responsible for the development of Terminator Technology.

Little needs to be said on how seeds are the building blocks of life on this planet. For humans, seeds represent the beginning of the fuel that sustains us, but as basic as this may sound, our culture here in Canada has become increasingly disconnected from the very methods by which food makes its way into our kitchens and into our mouths, and needless to say, this disconnection also includes our understanding of seeds and the role that seeds play in shaping the food that is available to us.

Open your kitchen cupboards, look inside your refrigerator and glance down the aisles at your local supermarket, and seeds are the beginning of almost everything you see. Even

the packaging in many cases. Seeds of course also form the foundation for clothing, pharmaceuticals and as is the present push – fuel.

But as will be discussed today, a technology has been developed, that although is said to have not fully been tested, is a technology that will completely alter the ways in which food is grown and produced. One of the most recent changes to agriculture has of course been the introduction of Genetically Modified Organisms or GMOs. The debate surrounding their increasing presence on our planet is as heated now as it has ever been – you need only look at the increasing popularity of organic foods to see that this is just the case.

And with GMOs has come patents – and now the very seeds that are fueling our diets are increasingly becoming the property of a handful of very powerful agricultural corporations. And with the research that has gone into creating these seeds, there has been a barrier for these companies in protecting their research – and this barrier is the ability for farmers to save their seeds from their harvest, and replant them the following season. Well, this is of course is not good for business – no company would ever want to make an automobile that lasted forever – how would they ever do any business again?

So in the case of seeds, a technology has been devised that will ensure that farmers will not be able to save seeds for the following harvest, which in turn, will ensure that these seed companies have a constant flow of customers each and every year. This technology is a form of a GURT – a genetic use restriction technology. This particular technology which has genetically modified plants to produce sterile seeds is better known as Terminator Technology, or as TPS – Technology Protection System. This is the topic for today's program, because as has been the case in recent weeks – Canada has positioned itself as a leader in helping push this technology onto the world market. And we'll hear more about Canada's role later.

But first we need to better understand seeds themselves – the role seeds play in shaping our food and our lives, but we also need to understand the present structure of the seed industry here in Canada and around the world, and to better understand seeds, I spoke with Devlin Kuyek – a Montreal-based researcher who is on the staff of GRAIN. Grain is a an international non-governmental organization which promotes the sustainable management and use of agricultural biodiversity based on people's control over genetic resources and local knowledge. Devlin has been instrumental in publishing numerous reports on seeds and the seed industry, and in one of these reports Devlin mentions that, and I quote, "The seeds we plant are profoundly social". I for one never quite looked at seeds as being so social, so I asked Devlin to explain.

Devlin Kuyek: Well, seeds - if you think about the foods we get: tomatoes, corn; typical things that we're used to eating here, you don't see that out in the wild. You don't find tomatoes like the ones you buy for your dinner out in the wild. I'm referring to the fact that the agricultural diversity that we have has been built up over generations and generations, by people, and they've selected for, they've experimented with, they've made crosses - they've essentially been doing plant breeding to develop foods that meet certain

cultural needs, to meet certain agronomic needs; whatever it may be. So if you think of the example of the potato - in the wild, potatoes are generally all small, brown, inedible, and very low yielding. And then if you look at the Andes, you look at a country like Peru, they have thousands of varieties of potatoes: large ones, small ones, purple ones, brown ones, varieties that cook certain ways - thousands of varieties. And all of these have been developed by people, by farmers. It's only more recently that we've had scientists and companies come into the game. But everything that you see before you when you look at a farm, when you look at your plate, it's been about social interaction with plants.

Jon Steinman: Devlin explains how the seeds that shape our food supply also very much determine the agricultural practices that we see being used today.

Devlin Kuyek: The seed that you plant will have certain characteristics, and in that way, will shape, to a certain extent the type of farming that you carry out. If you think of the Green Revolution - the Green Revolution was a term used to describe massive change that happened in Asia and Latin America where a few high-yielding varieties of major cereal crops were introduced from these major international research centers and distributed far and wide to peasants in these regions. And these varieties demanded certain agricultural practices. They would grow well with a lot of fertilizer. They weren't very resistant to pests or very adapted to the local ecology, so they required a lot of artificial inputs, they required chemical fertilizers, chemical pesticides, they were also designed to encourage the use of machinery - so requiring a lot of external inputs.

Jon Steinman: Devlin explains, seeds themselves determine the external inputs that are then required to grow our food. The need for pesticides, fertilizers, mechanization is all a result of the type of seed in the ground. The Biotechnology industry - these seed companies that have genetically modified our food supply - argue that Biotechnology is in fact good for the environment, in that fewer chemical pesticides and chemical fertilizers will need to be used. But as we all know, food on this planet has been shaped without the assistance of these chemicals, so Devlin explains how important seeds are to those farmers growing food organically.

Devlin Kuyek: You can also have varieties that are adapted to more organic or ecological agriculture, so, say, varieties of wheat that don't require the use of chemical fertilizers, that are capable of absorbing a lot of nitrogen, these kinds of things. So the seeds that you have, in a way, shape your agricultural practices.

Jon Steinman: I asked Devlin if farmers retain the right to save their seeds and use them again the next season.

Devlin Kuyek: It depends on the crop. Wheat, for instance, is still largely a public seed system, and that's only because they haven't been able to commodify it. By commodifying, I mean selling back to farmers a commodity that you have to purchase every year. Wheat can be saved every year without a problem. There are other crops like that, but wheat is a little bit particular in how farmers have persisted in maintaining seed saving for that crop. But if you look at some of the other crops, what's happened with

canola, with soybeans, with maize, or corn, is that the private sector as really taken over there, for a number of reasons. But the main thing is that the national food regime has changed, and now we're into more of what you could say is a global food regime, in that it's transnational corporations, large, large transnational corporations, who dominate the global food industry, and who are less interested in setting up in particular countries than in being able to source from wherever they can for the cheapest prices and the best conditions. And so the governments' role in this, they define their role as more trying to create the conditions that will attract investment. And so, if agriculture policy, and particularly seed policy, is now set more about what interests these corporations than it is about what might serve the interests of a national food regime. When it comes to seeds, what corporations want are an investment environment that allows them to profit, and with seeds that means that farmers can't be able to save seeds, because that's where companies make their money, is by selling seeds every year and having a captive market.

Jon Steinman: Devlin explains how these seed companies ensure a captive market.

Devlin Kuyek: So they've introduced patents, they've plant breeders' rights, they've introduced all kind of legislative tricks. They've also cut back on public plant breeding programs, and privatized them - it's like one big subsidized market for companies who come in, because their risks are taken away from them and the market is set up so that they can come in and sell their seeds and know that they're going to make a substantial profit from them.

Jon Steinman: While the very foundations of our food system are becoming the property of multi-national corporations, Devlin comments if this poses a greater risk to those who save seed as they have done for generations.

Devlin Kuyek: Most of the varieties that are being put on the market are either protected by plant breeders' rights or patents (that's mostly for the GM varieties), or by contracts. So if you buy a variety, whether it's genetically modified or not, often now you have to sign a contract that prevents you from saving seeds from your crop, and even dictates who you have to sell the crop to. With plant breeders' rights, there is a provision that allows farmers to save seeds, but it's very narrow, and a farmer who saves seeds is really under risk of being challenged if those varieties do get out to another farmer. You're not allowed to exchange seeds with another farmer, you're not allowed to save part of your crop and sell it, which has been a traditional practice forever, really, and then in Canada it's always been there, where farmers have grown part of their crops to sell to other farmers as seed if need be. But that's being undermined. And with patents, what happened with Percy Schmeiser can happen to any farmer now. If your fields are contaminated, and you're saving seeds, and Monsanto sends their inspectors onto your fields, and they find that your fields have been contaminated, well, all of the sudden that crop, even if it's through some accidental contamination, and you've got a patented gene in it, well, that belongs to the patent holder.

Jon Steinman: As Organic agriculture seems to present an alternative to the industrial agriculture we see today, Devlin uses organic production to illustrate why saving seed

makes sense, but he also indicates how the regulations here in Canada are making it very difficult for organic growers.

Devlin Kuyek: If you look at organics, where seed saving just makes sense from every angle - just think about the ecology of organic farming and wanting to have plant varieties that are adapted to the farm, so you don't have to depend on external inputs - well, it makes sense for farmers to be doing seed saving and seed selection on their own farms. But if you need to show that your seeds are organic seeds, if the contract to sell your organic produce you have to demonstrate that, well then you have to name the variety that you've used, and under Canadian law, you can only name the variety if that variety comes from certified seeds, which means seeds that you purchased that year. So it's quite difficult, and farmers are struggling with this. I know here in Quebec, the organic farmers are desperately looking for ways to enable them to save seeds. And in order to qualify for crop insurance here, a farmer has to grow certified seeds, and they've been struggling to show that certified seeds doesn't mean that it's better seeds. You can save seeds - farmers have been doing this forever - you can do a good job of saving seeds and have no problems with your crop the following year.

Jon Steinman: As Devlin further explained, the rights of those who breed plants in this country are protected by the Plant Breeders Act, introduced by the Mulroney government in the late 80s in order to stimulate the private seed sector. The private seed sector, which is increasingly shrinking as a handful of multi-national companies fight to control it. In light of recent events, it has become obvious that these patents and contracts, these plant breeders rights, are only the beginning for these companies to ensure that they control the supply of the planet's food. As is the topic of today's broadcast of Deconstructing Dinner, the technology known as Terminator Technology, is a logical extension of this push to control our food. Devlin explains.

Devlin Kuyek: Terminator Technology is the logical extension - it's the perfect way to turn seeds into commodities, to turn seeds into something that has to be purchased year after year after year, to completely destroy the idea of a fully reproductive farm where everything comes from on the farm. It's shipping everything out to factory-like production, where it's bought and sold, and all decisions are made a handful of corporations. The bottom line is that this is agriculture, this is food that we're talking about. It's food. None of us can live without food, and the vast majority of people in the world can't live without agriculture. And to imagine that this handful of pesticide corporations have taken over the seed industry and are demanding all these rights to dictate what we can and cannot do with seeds - I think it's utterly scary, and a gross development, and I think it's time we start saying "back off" and let's think this through more carefully and come up with a seed system that suits the needs of people.

Jon Steinman: And that was Devlin Kuyek - a Montreal-based researcher on the staff of GRAIN - an international organization which promotes the sustainable management and use of agricultural biodiversity. You can find out more about this organization at www.grain.org, and his published reports on seeds and the seed industry will be available on the Deconstructing Dinner web site.

On today's broadcast of Deconstructing Dinner, we are discussing the topic of seeds, and the controversial technology known as Terminator Technology. A reminder that should you want to find out more about the topic covered today, you can visit the programs web site at www.cjly.net/deconstructingdinner, where an archived version of this show will also be available.

Canada has recently been criticized by international organizations as being one of a handful of countries promoting the introduction of this controversial technology. The technology, after all, is one that has genetically modified plants that produce sterile seeds. Why produce sterile seeds? Well for one, this will ensure farmers are forced to purchase seed each and every year as opposed to saving seed, which is more traditionally practiced. All of this of course ensures more control of the industry by a handful of multi-national seed companies.

But control of our food supply is already in place, and Terminator Technology is only another method by which this control can be ensured. To better explain the present control that seed companies have on our food supply, I spoke with Terry Boehm, the Vice-President of the Saskatchewan-based National Farmers Union. Terry is also a farmer. To illustrate the passion Terry has for speaking on this topic, he actually insisted on speaking to me even though he was visiting family in France. Terry Boehm explains the state of the seed industry and whether farmers are satisfied with it.

Terry Boehm: Farmers are becoming increasingly forced to deal with much more stringent controls through commercial contracts on how they use seed than they were in the past, and they're not happy about that. It's resulted in drastic increases in the price of seeds. For example, canola - on the prairies is largely planted to genetically modified canola - the seeds costs have escalated by a factor of at least ten times since genetically modified seeds have come in, with the technology use contracts that restrict farmers from using the seeds themselves.

Jon Steinman: As Terry explained to me in our conversation, the National Farmers Union helped recently push back legislation that would have narrowed the rights of farmers, and as is the topic of today's program, Terry comments on how the industry has developed alternative means by which they can control our food supply.

Terry Boehm: What couldn't be accomplished legislatively is being attempted to be accomplished - not just in Canada, but around the world - by biological means, and these are the genetic used restriction technologies, the terminator technologies, that would biologically force a farmer to buy seeds every year, because the production of what he planted would be sterile, or infertile, and wouldn't produce a crop the following year.

Jon Steinman: Although this Terminator Technology was developed to protect the seed companies and their patents by ensuring farmers are forced to purchase seed each year as opposed to saving it, another reason for this technology that is being promoted is its use as a biosafety measure. Biosafety is a term used to indicate the level of protection living

organisms have in coming into contact with others. Biosafety presents a real concern in terms of Genetically Modified crops or GMOs, because as is the case, the genetic modification of life is still very much an experiment – an experiment that is being tested on each and every one of us when we walk into our grocery stores and purchase food. The industry and our government ensures that all is well, but we need only look at the history of how scientific research since the beginning of science itself, has consistently been debunked and disproved. And with the level of opposition to to any genetically modified plants and food crops - an opposition that can be seen simply in the increasing popularity of organic foods, there is a lot of concern of cross-contamination between GM agricultural crops crossing with wild species, but as has been the case throughout the world, genetically modified crops are contaminating neighbouring farmers' fields – farmers who are planting non-GMO crops. The most publicized case was of course with Percy Schmeiser, the Saskatchewan farmer whose fields were contaminated with a genetically modified strain of canola.

So the industry is answering this concern by proclaiming that genetically modified seeds are the very solution to this genetically modified contamination concern. And the Terminator Technology which is the topic of today's show, is a technology that renders seeds sterile. So this technology is being marketed as a biosafety measure, because as is the case, sterile seeds cannot germinate into a plant.

Terry Boehm comments on the industry's marketing of this technology as a biosafety measure.

Terry Boehm: The purveyors of the GURTS, of the Terminators, say, well, this is the ideal solution to prevent contamination, but really, it's a technology protection system, and they early on admitted that they didn't need 100% success, and it wouldn't prevent contamination; all they needed was enough of a control that farmers would run into the situation I'm describing - that it just wouldn't be worthwhile for them to use their own seed.

Jon Steinman: The seed industry insists that there should be no concern about this technology restricting farmers. In the end it is said that farmers will have the choice to choose between a seed variety that they purchase each year, or as is more traditionally practiced – the option of saving and reusing seed. We will hear this argument by the way later in the show from Harry Collins who is with the very company that developed this technology. But I asked Terry if he thinks that if this Terminator Technology is commercialized, whether it will mark the beginning of this technology being the only one available.

Terry Boehm: One of the things that farmers such as myself who have saved seeds - and for example, I am one of the few left on the prairies who doesn't plant genetically modified canola - I saved a variety that was introduced prior to the genetic modification, and I've been replanting that on my own farm, because I'm just deeply concerned about genetic modification and the long-term human health and environmental effects, which I believe we aren't anywhere near knowing, and I think it was hastily released. But, the

question about whether it would be the only kinds of seeds that would be available in the future, obviously, if you're a seed company developing varieties, you would want to eliminate messy things like having to go through the courts, or having to have the enforcement of commercial contracts, and terminator being sterile would be an ideal way to do this. So I think the seed companies selling new varieties would all be incorporating this characteristic into the seeds very quickly.

Jon Steinman: Terry Boehm is not only the Vice-President of the National Farmers Union, he is also a farmer, and using himself as an example, he explains the close-knit nature of the agricultural industry, and because of this nature, farmers will be sucked into having to adopt this technology.

Terry Boehm: The multinational seed companies have very close relationships to the handful of grain companies in the world that purchase the farmers' production. And farmers are moving into a situation now where they're being locked into contracts where they're told what variety to grow - and this will be coming increasingly the case - and under what conditions to grow it if they want to sell it. And for someone like me, who's trying to operate outside of that system, over time, I will likely just become a residual supplier once they've hooked most of the farmers into this system, and hooked most of them into these seeds, that only in times of severe shortage will I have the possibility to sell.

Jon Steinman: As we will hear later on in the program from Harry Collins – the very man who represents the company that helped develop this technology – cross-pollination of Terminator seeds should not pose a threat. But as Terry Boehm explains, cross-contamination through pollination is not the only method by which seeds can intermingle with others.

Terry Boehm: But that's not the only way contamination takes place. Pollen flow is one method of contamination, but simply our bulk-food handling system: the rail cars, the grain elevators, the warehouses, the processors, etc., etc., and even on the farm itself. It's impossible for anybody that's worked in that industry that's being forthright to prevent contamination. The simple cleaning of the apparatus that transports the grains from one bin to the other - you never successfully get that 100% clean; the railcars aren't 100% clean. There's leakage takes place in the green handling facilities, there's multiple bins, side by side.

Jon Steinman: Terry explains how the agricultural industry and this push to introduce Terminator Technology – this technology to render seeds sterile - can be compared to the mining industry here in this country.

Terry Boehm: The food industry sees farmers almost like open-pit mines. They'll extract as much equity, as much of the wealth that's built up over generations out of those farms through these mechanisms - like forcing them to buy seed on an annual basis. And when they're done, they just simply will move on to another place where they can extract the same thing and leave the region abandoned, much like, for example, the uranium mines

in northern Saskatchewan. When there isn't sufficient resources, the towns close up. British Columbia, and Kootenay area, I guess you're all familiar with the mining coming and going, and boom and bust. I think that this Terminator is another one of these extractive tools, only for agricultural land.

Jon Steinman: In concluding our conversation, Terry comments on the role the Canadian government has played in dealing with Terminator Technology.

Terry Boehm: Canada always seems to be the lead with these incredibly dangerous, harmful, stupid and destructive ideas for family farmers in Canada.

Jon Steinman: And again, that was Terry Boehm, the Vice-President of the Saskatchewan-based National Farmers Union. Terry is also a farmer growing non-genetically modified canola.

On today's broadcast of Deconstructing Dinner, we are discussing the controversial seed technology named by industry as a Technology Protection System, but more publicly known as Terminator Technology, a method by which plants are genetically modified to produce sterile seeds.

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This controversial technology has recently been in the news given Canada is being criticized as one of a handful of countries helping promote this technology. The Canadian stance was most recently seen at UN meetings that took place between January 23-28 in Spain. It's not common for Canada to raise such a high level of controversy around the world, we typically have our neighbour to the south to rely on doing just that. But as is the case, the United States has not approved the UN Convention on Biodiversity – a convention which facilitates meetings such as those that took place in Spain. But when the agricultural industry here in Canada is dominated by many American-owned multinational corporations, you can be assured that the United States nevertheless has a strong voice at these meetings. But putting aside the voice of corporate America, this is a matter of biodiversity, and the very reason the UN created this Convention on Biodiversity, was that regardless of borders, the biological makeup of this planet affects us all. And any one given decision that affects this biological makeup, is a concern for every country and every person on this planet, and hence a forum is in place for all countries to discuss these issues. The very fact that the United States does not support this convention along

with many seed companies being headquartered in the United States itself, raises many concerns.

Terminator Technology has raised such controversy in various circles, that an entire international campaign has been formed here in Canada called Ban Terminator. This is a campaign that was initiated by the Ottawa-based ETC Group – an action group dedicated to the conservation and sustainable advancement of cultural and ecological diversity and human rights.

Lucy Sharratt, the coordinator for the Ban Terminator campaign based in Ottawa, provides a history of Terminator Technology and describes in better detail the UN Convention on Biological Diversity where this technology is being discussed internationally.

Lucy Sharratt: The technology was first patented in 1998, and has never been field trialed or commercialized. The United States government owns a patent with the US seed company Delta and Pine Land, and it's Delta and Pine Land, the soybean and cotton seed company, that actually has greenhouse trials of Terminator seeds right now, in the United States. But there's no scientific data that comes from those greenhouse trials that we can see, that's made public, and the company does not disclose the information. And we know that there have been no field trials and there is a current moratorium at the United Nations at the Convention of Biological Diversity that requests governments to not approve Terminator for field trials, or for commercialization. And it's that moratorium, actually that is at the core, right now, of the work to ban Terminator.

Jon Steinman: We're presently hearing from Lucy Sharratt, the coordinator for the ban terminator campaign based in Ottawa. As Lucy mentioned, this technology was created jointly by the US Department of Agriculture along with the Mississippi-based Delta and Pine Land Company. We will be hearing from Harry Collins shortly, who is at the forefront of Delta and Pine Land's push to test and commercialize this technology.

But in looking at the two principle reasons for choosing the topic of today's program, one is that any news to do with seeds will always remain as one of the most important topics to discuss here on this show, Deconstructing Dinner, as seeds represent the foundation of our food supply. But as is also a reason for choosing today's topic, Canada has been at the forefront of these meetings on Biological Diversity, and is being widely criticized for the role our government has taken most recently during meetings in Spain, but also at meetings that took place in February of 2005 in Bangkok. Lucy Sharratt explains.

Lucy Sharratt: It's been really shocking to see the role that Canada has been playing in international negotiations at the United Nations - that all of a sudden we see Canada, in the international arena, trying to push open this existing moratorium on Terminator seeds, that Canada has boldly tried to promote Terminator at the international level. Governments across the world, in 2000, decided that they wanted a moratorium on Terminator because it was so dangerous, particularly for farmers in developing countries, but in February of 2005, the Canadian delegation to a meeting of the UN body had very

clear instructions to try and overturn the moratorium, and push open the approval of Terminator, and this was defeated, essentially, by the huge protests from Canadian citizens and other peoples across the world, and of course also by governments who don't want to see this happen. But this was a very huge alarm that - it's really the basis of why the Ban Terminator campaign exists right now, is in response to this move by the Canadian government, that was supported by Australia and New Zealand. And in January of this year - 2006 - there was a meeting, a different kind of meeting of the same kind of Convention on Biological Diversity, where we saw the results of Canadian protests being borne out by the Canadian government, which said, "Oh, we don't promote or oppose Terminator Technology", which is really a ridiculous position to take. It's a non-position, and one on such a controversial technology. But what it meant was that the Canadian government was trying to avoid the kind of protests to their actions that they'd seen in the past, when they tried to push Terminator, but actually, the actions of the Canadian government, even in January, was to support, now, the promotion of Terminator by other countries; that instead of Canada taking the lead role in promoting Terminator at this meeting, it was Australia, supported by Canada and New Zealand, with a very strong presence from the United States, and a very strong industry presence. And we really see that it's these countries, within this treaty, that appear to have a very strong strategy, over the long term, to see approval of Terminator Technology.

Jon Steinman: As Lucy explains the stance the Canadian government has taken on this issue, she further explains the stance that other countries have taken on Terminator Technology.

Lucy Sharratt: It's very clear that African countries speak with one voice on the issue. In fact, they have a group, together, or African countries that does speak, literally, with one voice at the United Nations, and they made a very impassioned speech in defense of life, which they thought was threatened by Terminator - life on this planet. They talked about the fact that 90% of African farmers save seed, and this is the common experience and understanding of developing countries, is protecting farmers who save seed from Terminator Technology. And so broadly, across developing countries, regions of the world, governments speak out against Terminator, and don't see any reason why the moratorium should be overturned, and certainly don't understand why other governments would fight so hard for this. What we see is Australia, New Zealand and Canada working together with the United States in a position that promotes Terminator Technology, and in between we have the European Union, which maintains that the moratorium is a good one; it's based on a precautionary approach, and of course Europeans also support the moratorium.

Jon Steinman: While the dominant voices at these meetings are seemingly those from the seed industry and the branches of government that are speaking for them, there is little room for the public voice to be heard. Hence the creation of the Ban Terminator campaign – a campaign designed to educate the public on the issue of Terminator Technology and lobby those parties participating at these UN meetings. As the coordinator of this campaign, Lucy Sharratt describes the campaign.

Lucy Sharratt: The campaign was formed in May of 2005, directly in response to the actions of the Canadian government. So when the Canadian government made it clear, at the United Nations, that they were going to work to promote Terminator Technology, Canadian groups, in particular, responded to this with a discussion about the need to the campaign. And the campaign is now a global campaign that's - really, one of its main focuses is the Convention on Biological Diversity, and protecting and strengthening the moratorium, hopefully turning it onto a ban, and encouraging national bans on Terminator. The campaign is supported by Via Campesina, and the Pesticide Action Network for Asia and the Pacific, Third World Network, and other organizations across the world. Networks of farmers and indigenous peoples participate in the campaign in various ways, and there are national campaigns - there's a Canadian campaign, a German campaign, and a UK campaign - and other types of ways that peoples in different countries participate in the campaign. And really, the time is critical right now, in February, before the March meeting of the Convention on Biological Diversity, which has the most authority in making decisions. And this meeting will happen on March the 20th to the 31st, and so we're really asking Canadians to write to the new government and ask for very strong positioning against Terminator Technology for this meeting in particular, with the hope that this would strengthen the moratorium, or certainly keep the Canadian government from supporting the actions of Australia and New Zealand at this time.

Jon Steinman: And that was Lucy Sharratt of the Ban Terminator campaign. Again for more information you can visit www.banterminator.org, and this information will also be available on the show's web site at www.cjly.net/deconstructingdinner.

My final guest on today's program is the very man who has been traveling the world since 1998 promoting the Technology Protection System otherwise known as Terminator Technology, and that is Harry Collins – the Vice-President of Technology Transfer for the Mississippi-based Delta & Pine Land Company – the company that along with the US Department of Agriculture, developed this technology that genetically modifies plants to produce sterile seeds. Delta & Pine Land is presently conducting greenhouse tests of Terminator Technology. They are the 11th largest seed company in the world, as well as the largest cotton seed company in the world.

I spoke with Harry from his office in Scott, Mississippi, and he explains the technology in greater detail.

Harry Collins: With our particular system, the farmer would buy seed, that, just prior to bagging the seed, the seed company would trigger it, with the application of a specific chemical, and when the seed germinates, basically a non-reversible process occurs, genetically, within the plants. These would be the plants in the farmer's field. But it would not manifest itself 'til the very end of the production of seed in the farmer's field; that is, the seed needs to develop, because with most crop plants, the seed is the product that is harvested and sold, and so on, by the farm. What would happen at the very end of the development of the seed, the drydown period of the seed, it would then become non-viable, so that you couldn't replant the seed and get it to germinate the next season.

Jon Steinman: As has already been discussed by today's guests, the seed industry and supportive governments are promoting this technology as not only a protective tool for the companies that are developing new strains of plants, but also as a biosafety measure. As Terry Boehm of the National Farmer's Union suggested, this mention of biosafety is merely a cover-up for the technology's principle purpose.

But regardless, there are many concerns that as cross-contamination has already proven to be an issue with genetically modified crops, that contamination from sterile seeds could then render neighbouring crops and plants that are not genetically modified sterile as well. Harry responds to these concerns.

Harry Collins: There have been concerns that some of these might eventually outcross with related wheat species or related plants, related wild plants, and this could be a measure to prevent that from happening. In other words, if the pollen that would be released by these plants in the farmers' fields would also cause, if they were to outcross to wheaty plants in the, or wild plants in the surrounding area, it would cause those plants to produce non-viable seed; therefore, the transgenic genes that would also go along with that pollen would not be propagated and carried on and into the wild species. So that's what we call biosafety, and that would be an advantage of the TPS system, the Technology Protection System.

Jon Steinman: But he continues in ensuring that it's known that the crops by which this technology would apply to are predominantly self-pollinating, and are those that would pose little risk of cross-pollination with conventional plants or wild species.

Harry Collins: One point I would like to make to you: we've always talked about highly self-pollinated crops. We haven't talked about cross-pollinated crops, and that is significant, because it's the self-pollinated crops that do not outcross very much, and therefore you get very little contamination on farmers' fields near the - it would be miniscule, and I don't think that the farmer would ever notice that there's any sterile seed in his field.

Jon Steinman: But as Terry Boehm of the National Farmer's Union mentioned earlier on the show, cross-pollination is not the only way in which the contamination of other crops can occur. Physical contamination through the bulk processing methods of the agricultural industry creates the environment for physical contamination between seeds.

On the topic of contamination, one concern regarding this technology is of course the greenhouse testing that is presently being conducted by Delta and Pine Land. Because of the UN recommendations as part of the convention on biodiversity, Delta and Pine and the US government have not been conducting field testing on Terminator Technology out in the open. But in August of 2005, a tornado ripped through communities in Mississippi and destroyed 2 of Delta and Pine Land's greenhouses while damaging 11 others. I asked Harry if field testing on Terminator Technology has now begun.

Harry Collins: I can tell you that there was no contamination or any kind of transgenics because of that storm that we had, and that situation. And certainly there was nothing as far as TPS is concerned.

Jon Steinman: In touching on the very name of this technology itself (TPS) – Technology Protection System – the name illustrates the principle reason for the creation of this technology, and that is to protect the companies that are developing new strains of agricultural crops. As Harry explains, this technology will provide an incentive for the seed companies to further their research.

Harry Collins: When farmers buy seed, and only buy it one time, it causes farms that are developing those seeds to not have an incentive and therefore - many times we've seen this happen, for instance, with small grains such as wheat - there are very few companies that are involved in wheat breeding any longer, because would develop new varieties, and then the farmers would purchase the seed one time and they wouldn't come back. and because of that, are not getting a lot of new varieties that they'd like to have because the seed companies can't afford to invest in research and then not get a payback.

Jon Steinman: As Harry explains, seed companies are concerned of the ability for farmers to save seed. As is the case, farmer's can purchase seeds and save the new seeds from that harvest for use the following season. From the perspective of the seed companies, Harry explains that they cannot afford to invest in research and not get a payback for this research, and hence the creation of Terminator Technology – a technology that renders seeds sterile upon harvest.

But in speaking of these seed companies not being able to afford to conduct research without getting a payback, we can refer to a recent broadcast of Deconstructing Dinner during which the topic of declining farmer's incomes here in Canada was discussed.

As is the case in the seed industry here in Canada, 4 principle seed companies are, Dupont, Syngenta, Monsanto, and Bayer. In 2004, Dupont pulled in 2.3 billion dollars in profits. Bayer - \$974 million dollars in profits. Syngenta pulled in \$598 million dollars in profits, and Monsanto - \$234 million dollars in profit.

And in 2004, Farmers in Canada recorded a net-loss of 7.7 billion dollars.

Are these seed companies really having trouble affording to invest in research?

You can find out more about corporate profits in the agricultural industry by visiting www.nfu.ca.

As is also an argument that enters into the circle of debate surrounding Terminator Technology or any Genetically modified technology pertaining to agriculture, it is often said by industry that in the end, farmer's have the choice between whether to save and re-use seed or purchase seed from the market. Harry explains.

Harry Collins: Farmers will make the choice. If they get a payback - just like anything that's used by businessmen - if they get a payback, with higher yields, newer traits, that make it more efficient to produce the crop, then they're going to purchase the seed. If they don't get that with new varieties, then they'll go back to using the seed that they've been using and are able to save, as they have in the past.

Jon Steinman: As Harry explains that farmers would have the choice to choose between Terminator seeds, or the traditional practice of perhaps saving and reusing seeds from harvest, we can look at the other side of the argument which was presented by Terry Boehm of the NFU – in that with the prevalence of contracts and conditions that the agricultural industry forces farmers to accept, choice is becoming extremely narrow.

But with all decision or discussion on what could potentially be the structure of the agricultural industry should this technology be approved and commercialized, this is all speculation, as we have discussed, there is presently a de facto moratorium on any field testing of this technology. Harry responds to the moratorium.

Harry Collins: There is no moratorium. I'm not sure where that comes from. It's something that's been propagated by a lot of people, but there is no moratorium, and there never has been a moratorium, and I would like you to check that out. It's something that people and a lot of the NGOs - Non-government organizations - have said, but it's not true. There is no moratorium, and there has never been a moratorium, and that's one where I think their credibility is hurt. They make these statements, and you need to check it out because it's not true.

Jon Steinman: As Harry's response to the de facto moratorium perhaps confuses previous references to this moratorium, it is important to clarify that what exists right now is a recommendation that has been put forward by the UN Convention on Biodiversity. Although not legally binding, the recommendation has placed countries in a political position by which the field-testing and commercialization of this technology requires further discussion – and hence creates what is being called a de facto moratorium.

As was also mentioned earlier, Canada is pushing to change these recommendations and I will play a clip from my conversation where I presented a previous comment regarding biosafety that was mentioned by Terry Boehm of the NFU. Harry explains, following this, what Canada along with Australia, New Zealand and the US are pushing for at these UN meetings on biodiversity.

From Interview...

Jon Steinman: One of my guests on the show is Terry Boehm, who is the vice president of the National Farmers Union here in Canada, and they're based in Saskatchewan. And if we're if speaking here of biosafety, and more or less referring to one of his comments, he was mentioning how when the GURT, or Terminator Technology, in this case, was introduced, that it was at that point admitted that 100% success of this technology was

not, in fact, required, and that all you needed was enough of a control so that farmers could then not justify saving seed for the next season.

Harry Collins: I'm not sure who made that statement. I don't think I ever made that statement, and I don't think anybody from our company - and by the way, just to make this clear, it is co-owned by the Delta and Pine Land Company and the USDA ARS, the Agricultural and Research Service of the Department of Agriculture, and I don't know that either one of us made that statement.

Jon Steinman: So is this technology, is it not required that this technology be 100% successful?

Harry Collins: Well, let me answer another way. We don't know, and this is what we've asked for all along, and that is, that every introduction of everything such as this, be judged on a case by case basis, and that's the one thing that we've asked for, and the one thing, up to now, that apparently countries like Canada, New Zealand and Australia have held firm on, and that is, that each new technology be judged on a, be evaluated, on a case by case basis. So I cannot tell you, one way or the other, on that, but we certainly, before it's ever introduced, we go through many regulatory processes, and also, as I say, it would be evaluated on a case by case basis. We have not reached the point that we absolutely know the answer to that right now.

Jon Steinman: Here is another clip from my conversation with Harry.

From Interview:

Jon Steinman: Harry, in wrapping things up, even though this technology has been fully tested yet, the supply of seeds as it is right now throughout the globe is presently controlled by a shrinking number of corporations, and there is really a handful of crops that are really key, I guess, in forming the foundation for the planet's food supply. Now, given that these particular crops are increasingly those that are becoming genetically modified, it's, I guess, and correct me if I'm wrong, it's safe to say that if approved, Terminator Technology would replace many of these crops and become the foundation of this global food supply. With what you know about this technology, and taking into consideration that yes, it has not fully been tested, is this not a risk that here we are, potentially going to populate the planet with plants that contain a gene that are designed to destroy their reproductive capabilities?

Harry Collins: Well, let me answer a couple levels here. First, I want to be sure it's understood that TPS would only be applied to the large crops. It would only be applied to large agricultural economies. It's not going to be applied to the small, and sometimes referred to indigenous farmers of the various parts of the world. It is not going to be applied to older varieties; it would be newer varieties, and it would be where you have large agricultural economies, and where farmers normally, such as in the United States

and Canada, they normally, with most crops, buy their seed anyhow, because they get high quality seed. Seed is not that expensive to begin with, and so that's where this would be applied. And again, to self-pollinated, large, self-pollinated crops; I've mentioned wheat, rice; another would be soybeans. And then one other would probably be cotton, which is the crop that we are involved with, one crop we're involved with.

Jon Steinman: In wrapping up my interview with Harry Collins, I asked him what his outlook was on the commercialization of his Technology Protection System (or otherwise known as Terminator Technology). As he mentioned just previously, the technology is being designed for modern crops on large production-based farms. But as he mentions in the following clip, this is a technology that will help move subsistence farmers to production forms of agriculture. And as was mentioned earlier, subsistence farmers – those growing food to feed themselves and their communities, are certainly not growing modern crops.

Harry Collins: I think when calmer people prevail, that they'll understand that this is, could actually be a very positive thing, both for biosafety and producing new varieties, new technologies, that will help the farmer, and help the farmer, in some cases, move from a subsistence-type farming to more production-type farming if that's where they want to go. I think that it would encourage farmers to try new varieties that may give them an added boost in their production and more efficient production. And they may find that it's the kind of thing that would produce enough of a crop that they could then become a production farmer and actually have crops that they could sell rather than just subsistence crops, where they just have enough to live on.

Jon Steinman: And that was Harry Collins - Vice-President of Technology Transfer for the Mississippi-based Delta & Pine Land Company – the company that along with the US Department of Agriculture, developed the technology that genetically modifies plants to produce sterile seeds. You can visit Delta and Pine Land's web site at www.deltaandpine.com.

One of the key voices missing on today's program is one representing our federal government's Department of Agriculture who are representing the Canadian public at these UN meetings on biodiversity where Terminator Technology is being discussed. One of the lead figures is Dr. Campbell Davidson who is with the department's International Scientific Cooperation Bureau. He was unavailable to comment as he was out of the country. I did however forward my questions to the media spokesperson for the bureau, and I was told that they were not able to answer the questions. Why? Because as a result of the newly elected conservative government, the department is in a process of transition, and they are unsure of how their position on Terminator Technology will change - certainly one of the downsides to elections that seem to take place every year or two when a minority government is in power.

But as was the case, my questions were mostly referring to the meetings in Spain themselves, and what Canada's position was at these meetings. I asked why Canada is being criticized by international organizations. I inquired into the recent comment made by Campbell Davidson, who stated that terminator seeds could provide a biosafety benefit. I asked why Canadians should trust a technology that would be introduced by the very same companies responsible for concerns surrounding cross-contamination of genetically modified crops. But most importantly, I asked that given the issue at the forefront of agriculture here in Canada is that farmers' incomes are at all time lows while the companies who control the agricultural industry are making record profits, I asked: is Terminator Technology not just another step that will only increase the actual costs for farmers? I asked if this technology is not a push in the wrong direction. But these questions could not be answered as the Department of Agriculture is unsure of their present position. All the more reason for Canadians to let our newly-appointed Minister of Agriculture, Chuck Strahl, know where we stand on this issue - do you support it or you not?. You can contact him at (613) 759-1059 or you can send him an email at strahlc@agr.gc.ca.

Given Terminator Technology will be discussed once again in March at the UN meetings on biodiversity taking place in Brazil, I'll pose these questions once again on a future show that will follow-up on the outcomes of that meeting. I'm sure by then, we will know Canada's position. Also, should you want to know more about the topic of seeds, and the threat of genetically modified crops to farmers, you can pick up a great book called 'Brave New Seeds', that is published here in Canada by Fernwood publishing. This is a book that was published in 2000, although everything inside of it is still very much applicable to today. It even does mention Terminator seeds.

I'll leave you with a couple of clips from my interviews.

Devlin Kuyek: The bottom line is that this is agriculture, this is food that we're talking about. It's food. None of us can live without food, and the vast majority of people in the world can't live without agriculture. And to imagine that this handful of pesticide corporations have taken over the seed industry and are demanding all these rights to dictate what we can and cannot do with seeds - I think it's utterly scary, and a gross development, and I think it's time we start saying "back off" and let's think this through more carefully and come up with a seed system that suits the needs of people.

Terry Boehm: This is nature, and life, and reproduction, and the fundamentals of our planet and our biosphere, and somehow, when you attach genetics to it, it becomes this scientific commodity to be sold.

Jon Steinman: That was this week's edition of Deconstructing Dinner, produced and recorded in the studios of Nelson, British Columbia's Kootenay Co-op Radio. I've been your host Jon Steinman. I thank my technical assistant tonight Dianne Matenko. All of those affiliated with this station are volunteers, and financial support for this station is received through membership, donations and sponsorship from local businesses and organizations. For more information on the station or to become a member, you can visit

www.cjly.net, or dial 250-352-9600. And should you have any comments about tonight's show, or want to learn more about topics covered, you can visit www.cjly.net/deconstructingdinner.

Till next week...